

CLAIMS

1. A method for selecting a wireless device network communication link to a destination host through one of a plurality of available wireless protocol links, the method comprising:

selecting a first protocol link from the plurality of available wireless protocol links based on predetermined criteria;

establishing a first network connection through the first protocol link;

detecting a change in status of the predetermined criteria of the first protocol link;

selecting a second protocol link from the plurality of available wireless protocol links based on the change in status of the predetermined criteria;

establishing a second network connection through the second protocol link; and

terminating the first network connection through the first protocol link, such that the wireless device does not lose network communication with the destination host.

2. The method of claim 1, wherein the predetermined criteria includes a link quality value.

3. The method of claim 1, wherein the link quality value is measured by a signal strength of the protocol link.

4. The method of claim 1, wherein the predetermined criteria includes a connection fee charged by a service provider of the protocol link.

5. The method of claim 1, wherein selecting a first protocol link includes communicating with a first service provider adapted to provide and maintain the first protocol link.

6. The method of claim 1, wherein selecting a first protocol link includes communicating with a first base unit providing network communication using the first protocol link.

7. The method of claim 6, wherein establishing a first network connection includes assigning a first network address to the first base unit.

8. The method of claim 7, wherein establishing a first network connection includes assigning a second network address to the wireless device.

9. The method of claim 8, wherein establishing a first network connection includes mapping the second network address to the first network address so that data can be routed to the wireless device through the first base unit.

10. The method of claim 1, wherein the change in status or condition of the first protocol link with respect to the predetermined criteria includes a situation where signal strength of the first protocol link falls below signal strength of the second protocol link.

11. The method of claim 1, wherein selecting a second protocol link and establishing a second network connection are performed within a predetermined amount of time allotted for a “liveness” check so that a transition between the first network connection and the second network connection is transparent to the wireless device.

12. The method of claim 1, wherein selecting a second protocol link includes communicating with a second base unit providing the second protocol link.

13. The method of claim 12, wherein establishing a second network connection includes assigning a third network address to the second base unit.

14. The method of claim 13, wherein establishing a second network connection includes assigning a second network address to the wireless device.

15. The method of claim 14, wherein establishing a second network connection includes mapping the second network address to the third network address so that data can be re-routed to the wireless device through the second base unit.

16. The method of claim 1, further comprising:
generating a mapping table for mapping the wireless device to the first protocol link.

17. The method of claim 16, further comprising:
updating the mapping table to map the wireless device to the second protocol link.

18. The method of claim 17, further comprising:
using a network address translation (NAT) table to route data to/from the wireless device from/to a network host site.

19. A wireless network communication system, comprising:
a plurality of wireless protocol base units each of which is adapted to provide a wireless protocol link to a network destination host;
a wireless communication device adapted to provide a wireless connection to the network through a first wireless protocol link of the plurality of protocol links, and configured to monitor the plurality of wireless protocol links for availability based on predetermined criteria, such that the first wireless protocol link can be replaced with another protocol link from the available protocol links when a status of the first wireless protocol link changes; and
a Control Center configured to manage mapping of network addresses to replace the first wireless protocol link with another protocol link from the available protocol links without disrupting communication between the wireless communication device and the destination host.

20. The wireless network communication system of claim 19, further comprising:

a plurality of service providers corresponding to the plurality of wireless protocol base units, wherein the service providers enable wireless network connection to the wireless communication device through the wireless protocol base units.

21. The wireless network communication system of claim 19, wherein the wireless communication device includes a health monitor for monitoring health of the plurality of wireless protocol links.

22. The wireless network communication system of claim 21, wherein the wireless communication device includes a mobile connection logic for generating a list of prioritized wireless protocol links for replacement of the first wireless protocol link.

23. The wireless network communication system of claim 16, wherein the available protocol links include wireless protocol links with signal strengths above a predetermined level.

24. The wireless network communication system of claim 16, further comprising:

a mapping table configured to map wireless protocol links to the wireless communication device.

25. The wireless network communication system of claim 24, further comprising:

a ground connection logic in the Control Center adapted to route data packets according the mapping table.

26. The wireless network communication system of claim 25, wherein the ground connection logic routes data packets by encapsulating packets with network addresses mapped by the mapping table.

27. A wireless device for enabling wireless connection to a network, the wireless device comprising:

a transceiver configured to receive forward link signals that have been transmitted from a plurality of base units providing a plurality of protocol links, and to transmit appropriately-powered reverse link signals to the plurality of base units;

a digital signal processor configured to demodulate and decode the forward link signals, and to modulate and encode the reverse link signals; and

a mobile connection logic configured to provide the wireless connection to the network through a first wireless protocol link of the plurality of protocol links, the mobile connection logic configured to monitor the plurality of wireless protocol links for availability based on predetermined criteria, such that the first wireless protocol link can be replaced with a second protocol link from the available protocol links when a status of the first wireless protocol link changes.

28. The wireless device of claim 27, wherein the mobile connection logic includes:

a first memory configured to store data comprising parameters related to the first wireless protocol link.

29. The wireless device of claim 28, wherein the mobile connection logic includes:

a second memory configured to store data comprising parameters related to the second wireless protocol link, such that parameters stored in the second memory are transferred to the first memory when the mobile connection logic determines that the second protocol link is established and verified to be properly operating.

30. A network communication control center for enabling wireless connection to a network for a wireless device, comprising:

a network interface adapted to enable the control center to interface with the network;

a ground connection logic configured to map and route data packets transmitted between the wireless device and a destination host through a plurality of wireless protocol links by using data tables, the ground connection logic operating to manage network addresses of the plurality of wireless protocol links, such that a first wireless

protocol link can be replaced with a second protocol link from the available protocol links without disrupting communication between the wireless device and the destination host.

31. The network communication control center of claim 30, wherein the data tables include:

an NAT table configured to enable the ground connection to match a physical address contained in the data packet to a first network address assigned to the wireless device.

32. The network communication control center of claim 30, wherein the data tables include:

a mapping table configured to enable the ground connection logic to route the data packet to or from a first network address assigned to the wireless device through a second network address assigned to a base unit that is providing a wireless link to the selected second wireless protocol link.